Experts in improving learning and reducing cost in higher education.

The Learning MarketSpace, February 1, 2002

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Written monthly by Bob Heterick and Carol Twigg, *The Learning MarketSpace* provides leading-edge assessment of and future-oriented thinking about issues and developments concerning the nexus of higher education and information technology.

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KEEP YOUR EYE ON THE BALL

Colleges and universities across the country are spending millions of dollars on information technology (IT). If you asked campus leaders why they are making these investments, most of them would answer that one of the most important reasons is to improve teaching and learning.

Suppose you then asked, what are some of the specific educational problems on your campus that you think IT can address? We suspect that most of them would be hard-pressed to answer.

One of the reasons for this, we believe, is that most institutions are focused on teaching rather than learning. A tremendous amount of energy is being expended these days on faculty development. The goal of most of those efforts is to get faculty to use IT in their teaching or to put their courses online. It is not surprising that a popular topic on the programs of most IT-related conferences is how to engage faculty in using technology.

In most cases, however, few are spending the equivalent energy in examining what aspects of particular learning experiences inhibit students' learning achievement and how IT can be used to overcome them. If you don't begin with an examination of these factors, we think you will inevitably spend a lot of time and energy "improving teaching" with no clear roadmap for your activity. The goal then becomes faculty satisfaction with their teaching rather than measurable differences in the quality of student learning.

Given this focus on teaching, it's not surprising that most online courses produce the "no significant difference phenomenon"--i.e., learning outcomes that are as good as those achieved in face-to-face classrooms. Without a conscious examination of the learning inhibitors and a strategy to change the student experience, you will inevitably duplicate learning results, albeit in a new medium.

In contrast, all 30 of the institutions involved in the Pew Grant Program in Course Redesign are explicitly concentrating on using IT to improve learning. These projects target large-enrollment introductory courses for redesign. If you're interested in improving learning, introductory courses are a good place to start since they tend to have higher D-F-W (drop- failure-withdrawal) rates than more advanced courses, and, as such, more learning problems in need of solutions.

In the redesign process and in the early implementation phase of these projects, a number of common learning issues have emerged. An important one is that many students are not spending sufficient time on task. Using IT-based course management systems to structure the redesigned courses has enabled the faculty to know what students are doing--specifically, how and to what extent they are engaged in interacting with course content.

It may seem obvious that knowing how each student is spending his or her time in relation to the course is essential to understanding student success or failure in learning the material. But faculty in the vast majority of traditionally taught courses have no way of knowing how much time students are engaged in learning. Typically, students come to class, listen to lectures, participate in discussions, read the assignments and do the homework, which may or may not be graded. Assessments are infrequent, group-oriented and often occur too late in the process for active intervention. All the faculty see are the results of a test or examination. If they observe a high percentage of poor grades, they have no way of knowing what is causing inadequate performance.

Riverside Community College (RCC) is redesigning Elementary Algebra based on a web-based software package called ALEKS that generates individualized assessments, study plans, and active learning sets. Students work through customized learning sets, building momentum, confidence and, ultimately, subject mastery. In the pilot phase of the redesign, the biggest surprise was finding that students were not spending enough time on the ALEKS program. Server statistics indicate that students averaged two hours per week in spite of the instructor-recommended six hours per week. Despite the lower-than-expected results, RCC cannot compare this to the time that students spend on homework in a traditional class. Since there is no tracking mechanism for traditional homework, they note, it may well be that students in a traditional class spend comparable amounts of time on assignments. The technology provides the faculty with useful information: now that they know that students are not spending the appropriate amount of time on homework, faculty have

developed a strategy to improve feedback mechanisms and motivation techniques.

According to findings from NSSE, the National Survey of Student Engagement, a gap exists across the country between the amount of time students spend on educational activities and what faculty members and others say is optimum. Many students spend only about half as much time preparing for class as their teachers recommend, about one hour for each class hour instead of two. Notice how NSSE's focus is on student engagement rather than teaching. NSSE's 2001 Report puts it as follows: "Student engagement represents two critical features of collegiate quality. The first is the amount of time and effort students put into their studies and other educationally purposeful activities. The second is how the institution deploys its resources and organizes learning activities to get students to participate in activities that decades of research studies show are linked to student learning."

Course management software allows you to move beyond general data and student self-reports and find out exactly how each student is spending his or her time on each particular course and take corrective action as needed. The University of Dayton is redesigning Introductory Psychology for online distribution, using Lotus QuickPlace. Students and faculty meet in large groups only a few times per semester: at an orientation session, a series of featured presentations, and one comprehensive final exam. Instead of attending lectures, students download interactive content from the web and discuss that content with other students and the instructor using a variety of computer-mediated communication tools. The faculty had expected that students would access the online course materials on a somewhat regular basis, but analysis of server log files showed that access peaked prior to exams and that procrastination has been a problem. Steps are now being taken at Dayton to ensure more regular engagement with the course.

Clearly, there is a lot of faculty development going on in the Pew redesign projects, but faculty development is not the starting point and it is not a goal or focus of the projects. The goal is to improve student learning, and the project teams make decisions about adding or subtracting course activities based on achieving that result. In most cases, those decisions have very little to do with teaching and everything to do with, in NSSE's words, getting students to participate in activities that are linked to student learning."

[In the next *Learning MarketSpace*, we'll describe some of the ways that faculty from the Pew projects are achieving the goal of greater student engagement.]

--CAT

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THE MORE THINGS CHANGE

. . . the more they stay the same. With all this marvelous new technology--computers for $800, high speed internet connectivity for less than my long distance phone bill, wireless networks, billions of pages on the World Wide Web--why does taking a college course on the net look so much like taking it while sitting in a classroom?

One reason may be the need for standards. Now, don't get me wrong. I¹m all for standards. Anyone who travels overseas is keenly aware of the suitcase full of power and phone adaptors that have to be lugged along. We would be in a sorry mess if manufacturers just arbitrarily decided how to thread water pipes, or automobile manufacturers moved the accelerator around from model year to model year.

But even though the early automobile builders featured buggy whips and kerosene lanterns on their products, they quickly adapted to the new paradigm. An automobile really wasn't a horseless carriage--it was something quite different. And even though the early personal computers featured an operating system with an interface that looked like that of a mainframe computer, software developers quickly discerned that they had an all together different paradigm and moved to graphic interfaces and the desktop metaphor.

If we look at higher education online, we still generally find all the standards of the old classroom lecture paradigm. The academic year runs from September to May. Maybe this was a reasonable idea in a primarily agrarian society. But we haven't been that for quite a few decades. Certainly, those folks interested in online education are not operating on a calendar that demands their services in the corn field over the summer months.

The "standard" academic calendar is a semester of 15 weeks. One could cite a number of reasons for the choice--not all subject matter requires a full academic year, there should be convenient breaks for holiday seasons, more frequent testing permits catching and correcting problems earlier, etc. but at root, the choice is really a convenience for the provider, the educational institution. We would be hard pressed to find another "business" that sets its schedule of operations to suit the management and staff . The old put down, "he keeps bankers hours," doesn't even apply to banks any more. Banks provide the bulk of their services 24x7 through ATMs and electronic access.

A granularity of 15 weeks doesn't fit any course that I know of. In fact,faculty expand or contract subject coverage to fit the 15 week "standard."I suspect every faculty member goes to his or her grave muttering, "We Could have done so much more if only we had more time." Coarse granularity is a convenience to the institution for administrative reasons--fewer registration and billing cycles, fewer grade reporting cycles, simpler classroom assignment procedures, etc.

Similarly, the 50 minute class "standard" can be rationalized. Transit time for the student to get from class-to-class is required and most campuses, at least until they reached 20,000 students, were sufficiently compact so as to expect that 10 minutes would suffice. John von Neumann, one of the last polymaths, once observed

something to the effect that the optimum time for a lecture must be one micro-century (about 52 minutes). Of course, the choice of 50 minutes is purely arbitrary (other than with 10 minute breaks it makes classes start on the hour) and unrelated to any optimal time for absorbing the content of a class. More recent views on the subject suggest that a shorter time may be better for most learners.

Courses begin and end concurrently with the semester beginning and ending. A few institutions have begun experimenting with courses that begin every week or two, much to the delight of the online learner. I am not aware of any that have similarly dealt with the ending. One wonders why, if we can unshackle ourselves from the fixed starting time, we can't let the ending time be determined by when the student has adequately mastered the learning material. Instead, we have adopted the assembly line approach, rejecting those who have been through the process for a fixed period of time and don't measure up. If we tested for some level of material comprehension, then some students could finish earlier, some later. It is surprising that our attitude about advanced placement hasn't carried over into our attitudes about course work.

And, when we look on the Web for learning material associated with a course,why do we find that most look suspiciously like the instructor's notes, designed and prepared for the classroom lecture? The book and the printed page are pretty much constrained to linearity and sequential access. Not so the Web. The structure of the Web invites non-linearity and random access. It encourages probing as deeply, or as shallowly, as the needs and interests of the user demand. It offers the possibility of immersing the learner in subject material in a way that the printed page never could.

As a final thought about "standards," why do we persist in funding the provider rather than the learner? It might be true that some governmental agencies, states primarily, might wish to provide subsidies to its state-supported institutions. But why should those subsidies be tied to enrollment? Many states provide subsidies to both the state supported and private institutions located within the state, albeit differentially. Truth be known, most state governments have long since forgotten the reasons why they fund higher education as they do.

If the purpose of state funding is to create a better educated populace, then what difference does it make where the populace gets its education--public, private, in-state or out, in the classroom or online? If the purpose is for reasons of economic development, what matters the size of the student body? Economic development is concerned with creating a future, not acknowledging a present.

The problem with funding the provider is that it creates the necessity for A major rule book on who is, and who is not, eligible--state supported but not private, in-state but not out, on campus but not online, full-time but not part-time, etc. It is akin to making astronomical calculations using the Ptolemic rather than Copernican view of the heavens. It can be done, but it requires a huge number of fix-ups to make it work. It would be a lot simpler to determine what the policy intentions of the funder are and then simply fund the learner.

Maybe Gerald Weinberg has it right when he observed, "The future will be like the past because, in the past, the future was like the past."

--RCH

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UPCOMING LEADERSHIP FORUM EVENTS

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February 25, 2002, Dallas, Texas

Co-sponsored by the Executive Forum in Information Technology at Virginia Tech

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- Find out how to design learning environments for the future by tapping the expertise of those who have done it.
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- Move beyond "today" and learn where on-line learning is going . . . find a model that will work for your institution.

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